

WHAT IS CLAIMED IS:

1. A strainer device for removing debris particles from a flow stream in a flow pipe, comprising:

- (a) a housing into which the flow stream passes from the flow pipe for filtration and from which it passes after filtration;
- (b) a screen element;
- (c) a source roller attached to a first end of the screen element; and
- (d) a take-up roller attached to a second end of the screen element;

in which the screen element extends across the interior of the housing in the path of the flow stream to define (i) a flow region upstream of the screen and a flow region downstream of the screen, (ii) an active portion of the screen element which is in the path of the flow stream and through which the flow stream may pass, and (iii) a non-active portion, and means for rotating the source roller and the take up roller to move the screen element from the source roller to the take-up roller so as to periodically replace the active portion of the screen element with a previously non-active portion of the screen element.

2. The device of claim 1 in which the device is placed upstream of a heat exchanger.

3. The device of claim 1 in which the screen element is disposed perpendicular to the flow direction of the flow stream in the housing.

4. The device of claim 1 in which a face of the screen element is disposed parallel to the flow direction of the flow stream in the housing.

5. The device of claim 4 further comprising at least one blocking member extending from the wall of the housing into sliding engagement with a face of the screen to cause the flow direction of the flow stream in the housing to rotate ninety degrees prior to passing through the screen element.

6. The device of claim 1 in which a face of the screen element is located at an acute angle to the flow direction of the flow stream.

7. The device of claim 1 which includes a screen support plate located at the rear face of the screen and fixed relative to the housing which permits the flow fluid to pass through it after passing through the screen and into the flow region downstream of the screen.

8. The device of claim 1 in which the screen element is located in a substantially vertical plane in the housing.

9. The device of claim 8 in which a flow blocking member extends from the wall of the housing into slidable engagement with the screen to form the flow region upstream of the screen and which blocks flow around the screen.

10. The device of claim 7 in which a flow blocking member extends from the wall of the housing into slidable engagement with the screen to form the flow region downstream of the screen into which the flow fluid passes after passing the screen.

11. The device of claim 7 in which a flow blocking member extends from the wall of the housing into engagement with a support plate located at the rear face of the screen and which permits the flow fluid to pass through it after passing through the screen, into the flow region downstream of the screen.

12. The device of claim 8 in which the screen is disposed substantially vertically in the housing and is movable with respect to flow

blocking members extending from the wall of the housing to the flow regions upstream and downstream of the screen.

13. The device of claim 12 which includes (i) a collection chamber for filtered debris particles located below the active portion of the screen and (ii) a debris collection slot adjacent the upstream face of the screen and below the active portion of the screen to permit debris particles filtered from the liquid by the screen to fall into the debris collection chamber.

14. The device of claim 13 in which the slot extends across the upstream face of the screen.

15. The device of claim 1 which includes a motor and a motor controller which to selectively activate advance of the screen element.

16. The device of claim 15 in which the motor controller is connected to a pressure transducer sensitive to the pressure in the flow fluid across the screen element and which actuates the motor in response to a pressure increase in the flow fluid as debris particle accumulate on the screen.

17. The device of claim 1 which includes a screen lock which locks the screen in place when not being advanced.

18. The device of claim 17 in which the screen lock includes a pin engageable with holes on the screen and a pin retractor to withdraw the pin upon advance of the screen.

19. The device of claim 18 in which the pin retractor is actuated in response to an pressure increase in the flow fluid as debris particle accumulate on the screen.

20. The device of claim 19 which includes by a movable element in communication with the flow region on the upstream side of the screen element and the flow region on the downstream side of the screen element.

21. A method of removing particulate debris from a fluid flow stream in a flow pipe by passing the flow stream through a strainer comprising:

- (a) a housing into which the flow stream passes from the flow pipe for filtration and from which it passes after filtration;
- (b) a screen element;
- (c) a source roller attached to a first end of the screen element; and
- (d) a take-up roller attached to a second end of the screen element;

in which the screen element extends across the interior of the housing in the path of the flow stream to define (i) a flow region upstream of the screen and a flow region downstream of the screen, (ii) an active portion of the screen element which is in the path of the flow stream and through which the flow stream may pass, and (iii) a non-active portion, and means for rotating the source roller and the take up roller to move the screen element from the source roller to the take-up roller so as to periodically replace the active portion of the screen element with a previously non-active portion of the screen element.

22. A method according to claim 21 in which the fluid comprises a petrochemical fluid.

23. A method according to claim 21 in which the fluid comprises a hydrocarbon.

24. A method according to claim 21 in which the fluid is passed from the strainer to a heat exchanger.